

**Commonwealth of Kentucky  
Division for Air Quality**

**PERMIT APPLICATION SUMMARY FORM**

Completed by: James A. Neal

GENERAL INFORMATION:

Name:	Weyerhaeuser Company - Kentucky Mills P.O. Box 130 Hawesville, Kentucky 42348
Date application received:	10-21-02 (latest information received)
SIC/Source description:	2611
EIS #:	021-091-00005/2
Application log number:	51211/G424
Permit number:	V-04-012

APPLICATION TYPE/PERMIT ACTIVITY:

<input checked="" type="checkbox"/> Initial issuance	<input type="checkbox"/> General permit
<input type="checkbox"/> Permit modification	<input type="checkbox"/> Conditional major
___ Administrative	<input checked="" type="checkbox"/> Title V
___ Minor	<input type="checkbox"/> Synthetic minor
___ Significant	<input checked="" type="checkbox"/> Operating
<input type="checkbox"/> Permit renewal	<input checked="" type="checkbox"/> Construction/operating

COMPLIANCE SUMMARY:

<input type="checkbox"/> Source is out of compliance	<input checked="" type="checkbox"/> Compliance schedule included
<input checked="" type="checkbox"/> Compliance certification signed	

APPLICABLE REQUIREMENTS LIST:

<input type="checkbox"/> NSR	<input checked="" type="checkbox"/> NSPS	<input checked="" type="checkbox"/> SIP
<input checked="" type="checkbox"/> PSD	<input type="checkbox"/> NESHAPS	<input type="checkbox"/> Other
<input type="checkbox"/> Netted out of PSD/NSR	<input type="checkbox"/> Not major modification per 401 KAR 51:017, 1(23)(b) or 51:052,1(14)(b)	

MISCELLANEOUS:

- ☐ Acid rain source
- ☐ Source subject to 112(r)
- ☐ Source applied for federally enforceable emissions cap
- ☐ Source provided terms for alternative operating scenarios
- ☒ Source subject to a MACT standard
- ☐ Source requested case-by-case 112(g) or (j) determination
- ☐ Application proposes new control technology
- ☒ Certified by responsible official
- ☒ Diagrams or drawings included
- ☐ Confidential business information (CBI) submitted in application
- ☐ Pollution Prevention Measures
- ☐ Area is non-attainment (list pollutants):

EMISSIONS SUMMARY:

Pollutant	Actual (tpy)	Potential (tpy) (Allowable)
PM	300	840
SO <sub>2</sub>	195	2588
NO <sub>x</sub>	860	3397
CO	718	5078
VOC	271	857
LEAD	0.02	0.03
<b>HAP &gt; 10 tpy (by CAS)</b>	<b>420</b>	<b>543</b>
<b>acetaldehyde 75-07-0</b>	<b>34.4</b>	<b>44.5</b>
<b>formaldehyde 50-00-0</b>	<b>14.1</b>	<b>18.2</b>
<b>hydrochloric acid 7647-01-0</b>	<b>24.1</b>	<b>31.2</b>
<b>methanol 67-56-1</b>	<b>307.6</b>	<b>397.7</b>
<b>methyl ethyl ketone 78-93-3</b>	<b>9.9</b>	<b>12.8</b>
Total Reduced Sulfur (TRS)	115	231

Note: Those HAPS which were emitted in amounts less than 10 TPY were not included individually in the above table, but were included as part of the total.

## SOURCE PROCESS DESCRIPTION:

The Weyerhaeuser Company - Kentucky Mills, formerly Willamette Industries, Hawesville Operations is an integrated pulp and paper mill utilizing the standard Kraft process for the manufacturing of bleached pulp from wood chips. The Kentucky Mills originally consisted of three areas: the Kentucky Medium Mill (KMM) (semi-chemical mill), the Bleach Pulp Mill (BPM) (Kraft mill), and the Fine Paper Mill (FPM) (specialty paper mill). However, on August 14, 2002 the Kentucky Medium Mill ceased operations and now the Hawesville Operations consist of only the Bleach Pulp Mill and Fine Paper Mill. On September 26, 2002, the Division received official notice of closure of the KMM. Further information was received January 2, 2003, regarding emission reductions due to closure of the KMM. The Kentucky Mills are located in Hawesville, Kentucky, in Hancock County on Kentucky Highway 1406. Table 1 in the statement of basis (SOB) identifies the facilities at these mills.

The standard Kraft process used at the Bleached Pulp Mill is described as follows:

Hardwood chips are used to produce virgin fiber as received at the Bleached Pulp Mill via truck and or railcar, then stored in piles. When chips are ready to be used, they are transported from the piles via conveyor for screening, where the oversized and small material is removed. The screened chip supply is then sent to a continuous digester in the pulp mill. The digester cooks the chips under elevated temperature and pressure in an alkaline solution of sodium sulfide and sodium hydroxide, referred to as "white liquor". During the cooking cycle, air trapped within the chips and gases

formed during cooking are relieved continually. Uncondensed relief gases are cooled and incinerated. Upon completion of the cooking cycle in the continuous digester, the contents of the digester (consisting of the pulp and spent cooking liquor, or “black liquor”) are transferred to a diffusion washer system, where the pulp temperature and pressure return to atmospheric levels. The gases leaving the diffusion washer and blow tank are collected and incinerated.

After washing, the pulp is then transferred to high density storage, while the brownstock washer filtrate (“weak black liquor”) is sent to the recovery area. The pulp is bleached in two multistage bleach plants using chlorine dioxide, sodium hydroxide, hydrogen peroxide and oxygen as bleaching agents. The fully bleached pulp is stored in high density (thickened) storage vessels. From the bleached high density storage, the pulp is either processed into sheets which are dried, baled and sold as product (Market Pulp) or transferred to the Fine Paper Mill to be used in manufacturing fine paper products.

In the recovery area, the weak black liquor is transferred from storage tanks and is concentrated to approximately 75 to 80% solids in multiple effect evaporators. Any non-condensable gases (NCGs), which are released during this process, are incinerated in the NCG Incinerator at the site or in one of the two existing lime kilns. The foul condensate from the evaporators is steam stripped prior to its reuse. The NCGs from the stripper, referred to as stripper off-gases (SOGs), are also incinerated.

Once the concentration is complete, the “heavy” black liquor is combusted in two recovery boilers, which produce steam for the mill. The smelt produced from burning the black liquor flows from the boilers into two smelt dissolving tanks, where it is quenched with weak wash to form “green liquor”, an aqueous solution of sodium carbonate and sodium sulfide. The green liquor is then transferred to a slaker, where calcium oxide is added to convert the sodium carbonate to sodium hydroxide. The resulting solution is an alkaline solution composed of white liquor and lime mud precipitate (calcium carbonate). The white liquor is then recycled back to the pulp mill area for cooking in the digesters. The lime mud precipitate is washed, dried, and then burned in a lime kiln at the mill to produce reburned lime (calcium oxide).

Pulp produced at the Bleached Pulp Mill is transferred to one of two paper machines where it is sometimes blended with purchased softwood pulp, depending upon grade requirements. Two paper machines produce various grades of fine paper. Refined pulp stock is mixed with machine white water and blended with additives added to produce specific paper grades. Various chemicals (including starch) and dyes are added to the paper to form different types of specialty papers. The stock mixture is then distributed on to the Fourdrinier fabric, where the paper sheet is formed. Steam dryers dry the paper and produce the final product.

Steam is supplied to the entire complex via No. 3 and No. 4 Recovery Boilers, two Power Boilers, the No. 2 Hogged Fuel Boiler and the BFB Boiler. Since the closure of the Medium Mill, the No. 2 Hogged Fuel Boiler burns only natural gas. The two power boilers and the No. 2 Hogged Fuel Boiler are backup or standby boilers which are used when the BFB Boiler is out of service. The BFB Boiler fires both wood waste and natural gas simultaneously.

Weyerhaeuser Company - Kentucky Mills has two wastewater treatment plants to treat the process water before discharge into the Ohio River. The treatment plants consist of primary clarifiers, polymer tanks, settling ponds, sludge ponds and aeration basins. One plant was used to treat effluent from the Kentucky Medium Mill, and the other one is still used to treat the combined effluent from the Bleached Pulp Mill and Fine Paper Mill. A sanitary sewage treatment plant for the entire complex utilizes the same outfall as the Bleached Pulp Mill/Fine Plant treatment plant.

## EMISSION AND OPERATING CAPS DESCRIPTION:

### Package Boiler EIS 001(01(C-40))

- a. Annual usage of the secondary fuel oil, shall not exceed 665,000 gallons per year based on an average heat content of 150,000 BTU/gal.
- b. The sulfur content of the secondary fuel oil shall not exceed 0.764 percent based on an average heat content of the oil of 150,000 BTU/gal.
- c. PM emissions shall not exceed 0.1 lbs./ mmBTU, and less than 25 tons/yr.
- d. Sulfur dioxide emissions shall not exceed 0.92 lbs./ mm BTU.
- e. Nitrogen dioxide emissions shall be less than 40 tons/yr.

### No. 2 Waste Wood Boiler EIS 011(11(C-50))

- a. Fuel oil shall be less than 0.50% sulfur.
- b. PM/PM<sub>10</sub> emissions from the boiler combustion shall not exceed 0.04 gr/dscf from boiler gases.
- c. Sulfur dioxide emissions shall not exceed 0.315 lbs./ mmBTU.
- d. Nitrogen dioxide emissions shall be less than 0.40 lbs./ mmBTU.
- e. VOC emissions measured as methane shall not exceed 99 tons/yr.
- f. Wood Fuel Dryer PM/PM<sub>10</sub> emissions vented through Hogged Fuel Boiler shall not exceed 3.42 lbs/hr and 14.36 TPY.

### Recovery Boiler No. 4 EIS 028(289(B-440))

- a. Backup fuels shall only be natural gas, propane, or fuel oil with sulfur content of less than 0.50%, . Use of the above fuels shall not exceed 10% of the total potential heat input.
- b. PM/PM<sub>10</sub> emissions shall not exceed 0.044 gr/dscf @ 8% oxygen and 132.61 TPY.
- c. Carbon monoxide emissions shall not exceed 200 ppm @ 8% oxygen, and 693.63 TPY.
- d. Nitrogen oxides emissions shall not exceed 110 ppm @ 8% oxygen, and 577.95 TPY.
- e. Sulfur dioxide emissions shall not exceed 100 ppm @ 8% oxygen, and 731.01 TPY.
- f. TRS shall not exceed 5 ppm @ 8% oxygen (12-hour average), and 19.42 TPY.
- g. VOC emissions measured as methane shall not exceed 20 ppm @ 8% oxygen, and 100.51 TPY.

### Smelt Tank No. 4 EIS 029(29 (B-445))

- a. PM emissions shall not exceed 0.20 lbs./ton of BLS, and PM and PM<sub>10</sub> of 29.57 TPY.
- b. Sulfur dioxide emissions shall not exceed 0.1 lbs./ton of BLS, and 24.64 TPY.
- c. TRS emissions shall not exceed 0.033 lbs./ton of BLS, and 8.13 TPY.
- d. VOC emissions measured as methane shall not exceed 0.16 lbs./ton of BLS, and 39.42 TPY.

### Lime Kiln No. 3 (Includes PCC Plant) EIS 030(30 (B-630))

- a. Backup fuels shall only be propane, and fuel oil with sulfur content of <0.50%. Heat input shall not exceed 115 mmBTU per hour.
- b. PM/PM<sub>10</sub> emissions shall not exceed 0.067 gr/dscf at 10% oxygen and 38.89 TPY.
- c. Carbon monoxide emissions shall not exceed 300 ppm @ 10% oxygen, and 243.57 TPY.
- d. Nitrogen oxides emissions shall not exceed 150 ppm @ 10% oxygen, and 200.07 TPY.
- e. Sulfur dioxide emissions shall not exceed 73 ppm corrected to 10% oxygen, and 135.78 TPY.
- f. TRS emissions shall not exceed 8 ppm (12 hour average) corrected to 10%, and 7.89 TPY.
- g. VOC emissions measured as methane shall not exceed 75 ppm @ 10% oxygen, and 93.18 TPY.

NCG/SOG Incinerator EIS 033(33(B-700))

- a. Propane shall be an alternate fuel.
- b. Carbon monoxide emissions shall not exceed 12.6 lbs./hr and 55.19 TPY.
- c. Nitrogen oxides emissions shall not exceed 19.1 lbs./hr and 83.8 TPY.
- d. PM and PM<sub>10</sub> emissions as measured by Method 5B shall not exceed 56.1 TPY and 56.1 TPY, respectively, or 12.8 lbs./hr, each.
- e. Sulfur dioxide emissions shall not exceed 14.42 TPY, or 3.3 lbs./hr.
- f. VOC emissions calculated as methane shall not exceed 50 ppm corrected to 8% oxygen and 12.57 TPY.
- g. Emissions of Total Reduced Sulfur (TRS) shall not exceed 0.92 TPY.

Biofuel (BFB) Boiler EIS 034(34(B-900))

- a. Fuels shall include waste wood, natural gas, propane, fuel oil with less than 0.50% sulfur content and High Volume Low Concentration (HVLC) off gases. Waste wood includes: waste wood, chips and bark, clarifier sludge, and any waste wood containing less than one percent by weight oil.
- b. Number 5 fuel oil may be used as a backup fuel for no more than 2 hours/day and 10 days at a rate not to exceed 7,703 gals/hr.
- c. PM/PM<sub>10</sub> emissions shall not exceed 0.10 lbs./mmBTU and 43.8 TPY.
- d. Carbon monoxide emissions shall not exceed 0.3 lbs./mmBTU, and 827.82 TPY.
- e. Nitrogen oxides emissions based on a 30 day rolling average shall not exceed 0.25 lbs./mmBTU and 830.0 TPY.
- f. Sulfur dioxide emissions shall not exceed 0.033 lbs./mmBTU and 73.67 TPY.
- g. VOC emissions measured as methane shall not exceed 0.10 lbs./mmBTU, and 257.54 TPY.

BPM Truck EIS 035(35(B – 1100, B-1101))

- a. The processing rate through railcar or truck unloading shall not exceed 350 tons/hour.
- b. PM/PM<sub>10</sub> emissions shall not exceed 0.09 lbs./hr and 0.4 tons/year.

Chip Screening, Chip & Wood Fuel Reclaiming & Transfer Chip Piles EIS 010(36 (B-1200) (B-1201) (B-1202))

- a. The processing rate through these all units shall not exceed 350 tons/hour.
- b. PM emissions shall not exceed 0.274 lbs./hr and 1.2 tons/year.

Power Boiler EIS 002(46 (B – 1320))

- a. Propane shall be the only alternate fuel.
- b. PM emissions shall not exceed 0.275 lbs./hr.

BPM Recovery Boiler No. 3 017(27(B-304))

Backup fuels shall only include natural gas and fuel oil with a sulfur content not to exceed 0.50%.

BPM Smelt Tank No. 3 018(18(B-435))

- a. Fresh water or caustic solution shall be used as the scrubbing liquid in the venturi scrubber.
- b. PM emissions shall not exceed 0.12 lbs./ton of black liquor solids (dry weight) and 23 tons/yr. PM<sub>10</sub> emissions shall not exceed 4.7 lbs./hr and 20.6 tons/yr.
- c. TRS emissions shall not exceed 0.33 lbs./ton of black liquor solids (dry weight) and non-sulfur bearing scrubber water.
- d. SO<sub>2</sub> emissions shall not exceed 0.1 lbs./ton of black liquor solids (dry weight).

- e. Each existing kraft smelt dissolving tank must have a concentration of PM in the exhaust gases discharged to the atmosphere that is less than or equal to 0.10 kg/Mg (0.20 lbs./ton).

K-2 Paper Machine 037(52(F20))

NA

OPERATIONAL FLEXIBILITY: NOT APPLICABLE